Maternal Immune Responses Tied to Schizophrenia in Offspring

August 16, 2010

A pregnant woman's immune response to infections such as the flu can influence the likelihood there her child will go on to develop schizophrenia, according to researchers at Temple University in Philadelphia. These results are detailed in a study published in the latest issue of *Schizophrenia Research*.

Schizophrenia has long been linked to exposure to infectious diseases during pregnancy, such as the flu or the measles. This has mystified researchers however, because infectious diseases don't typically get transmitted from the mother to an unborn child. The placenta, the protective tissue that encloses the baby, typically serves as a barrier.

Based on previous research she conducted, Lauren Ellman, PhD, and her colleagues, suspected that the cause of the increased risk of schizophrenia observed in the children of women who became ill during pregnancy might actually be the mother's immune system. When confronted with an infectious organism, certain immune cells release chemical messengers, called cytokines, which tell the rest of the immune system how to respond. One cytokine in particular, interleukin-8, is commonly released during infections during pregnancy.

Ellman's team analyzed blood samples drawn from pregnant women during the 1950s and 1960s and looked at the brain structures of their offspring. They found that women with higher levels of interleukin-8 were far more likely to have children with brain structures commonly associated with schizophrenia.

"The brain abnormalities we found are ones consistently linked with schizophrenia, suggesting that an elevated immune response during pregnancy might contribute to some of the brain abnormalities associated with the disorder," Ellman said.

Ellman and her colleagues also found, however, that not all of the children born from women with high interleukin-8 levels had structural brain changes. This means that some other factors also influence whether maternal immune inflammation leads to schizophrenia in children. The authors suggest that some fetuses have a greater vulnerability to altered brain development when confronted with maternal immune stimulation.

"In light of our study, which calls attention to a pregnant woman's increased susceptibility to

infection and the potential risks to her developing fetus, it is easy to see why the medical community routinely recommends that women who are pregnant or planning to become pregnant take special precautions to prevent infection, such as getting vaccinated," Ellman concluded.
